NASCOM Block Phase-Out

Status Overview

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Purpose and Agenda

- Purpose
  - Review of NASCOM Block Phase-Out activities
- Agenda

A. Background

B. Strategic Vision

C. Current activities

A. Background of NASCOM Block Phase-Out

Background

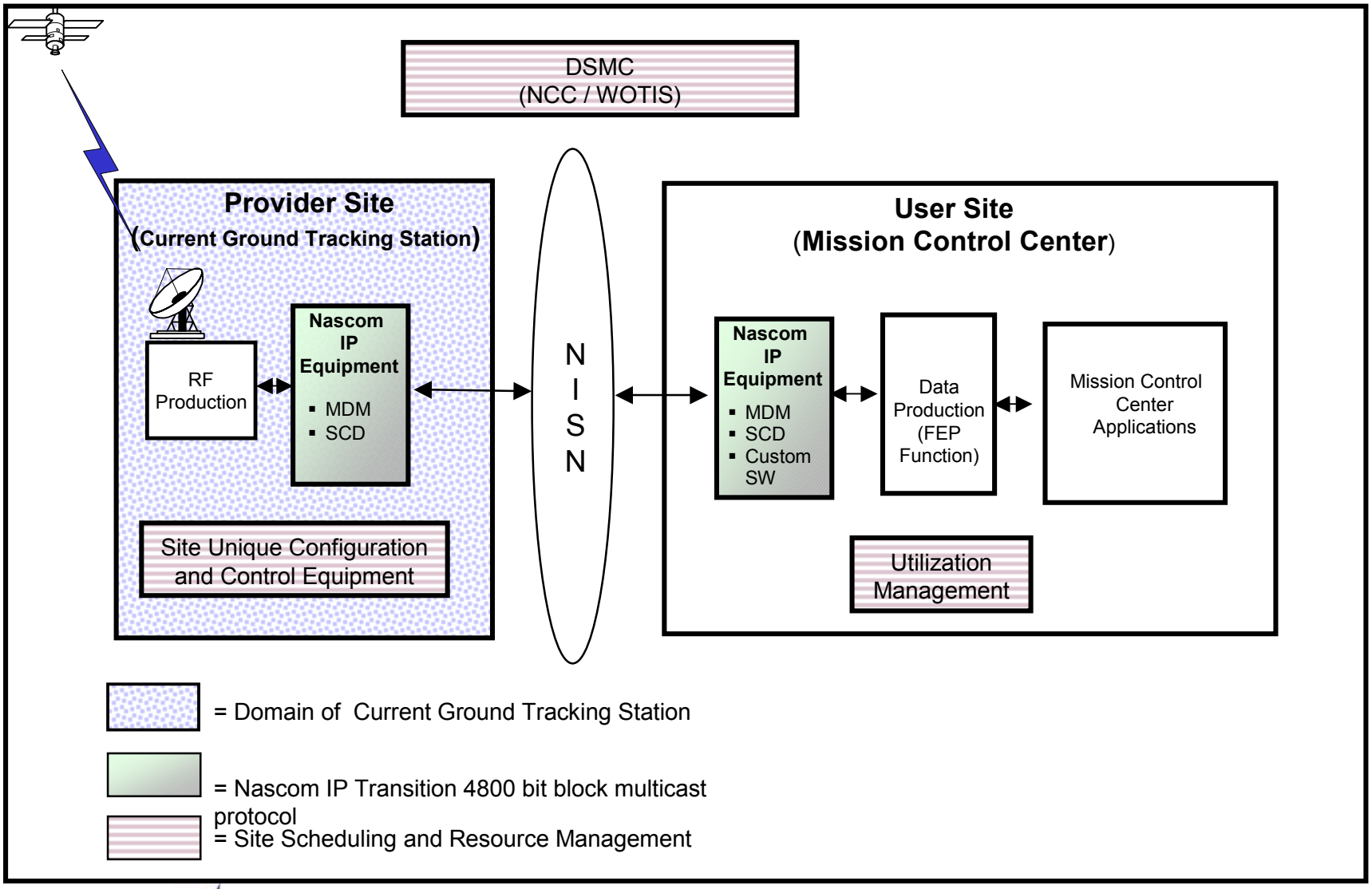
- Nascom IP Multicast is based on Nascom Block is a NASA proprietary standard which is outdated, and hampers transitioning to a more robust COTS based ground communications architecture
  - Continued use of Nascom Block standard requires that NASA maintain custom hardware and software (such as WSC MDM, JSC MDM, SCDs, etc.)
- NASA and CSOC formed a multi-center study team to investigate the phasing out of NASA ground communications services based on NASCOM blocks and to **propose a new replacement data service standard** for all NASA ground facilities and commercial ground facilities. Desired attributes included:
  - Standards based
  - Supports interoperability across agencies and networks through common interfaces
  - Low cost to implement
- NASCOM Block Phase-Out team conclusions:
  - CCSDS SLE meets requirements for future science missions using CCSDS compliant space links
  - With requirement extensions, CCSDS SLE could potentially support legacy missions with space links using TDM, CCSDS AOS forward service, and encrypted unframed synchronous bit-streams

Background (continued)

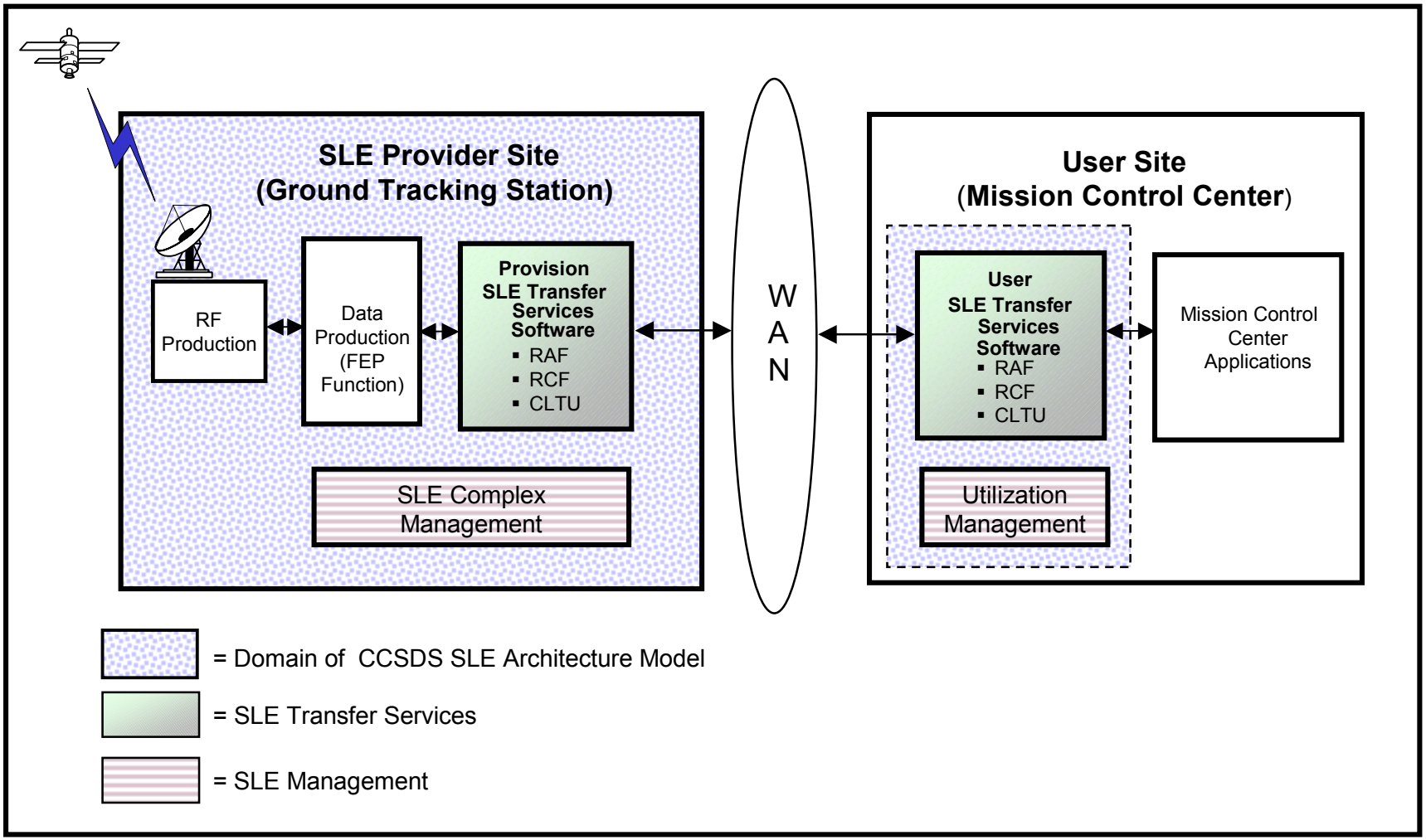
- Drafted a three part plan to phase out NASCOM block protocol
  - **Part 1**: Identify and implement SLE standard data services for future science missions
  - **Part 2**: Develop, test and implement extensions to SLE service implementations to support legacy missions using TDM, CCSDS AOS, and encrypted bit stream space links
  - **Part 3**: Develop and implement SLE for ground data messages (tracking, inter-center vectors, site scheduling, site status, payload data, etc.)

    Note: Addresses traffic not currently handled by SLE data service model
- The team developed a common SLE Service Architecture Model for SN and GN based on the DSN SLE implementation for the INTEGRAL mission
- The team developed a proposed NASA-wide Ground Data Service specification to implement CCSDS SLE services at all NASA and commercial ground tracking stations

Current Reference Model

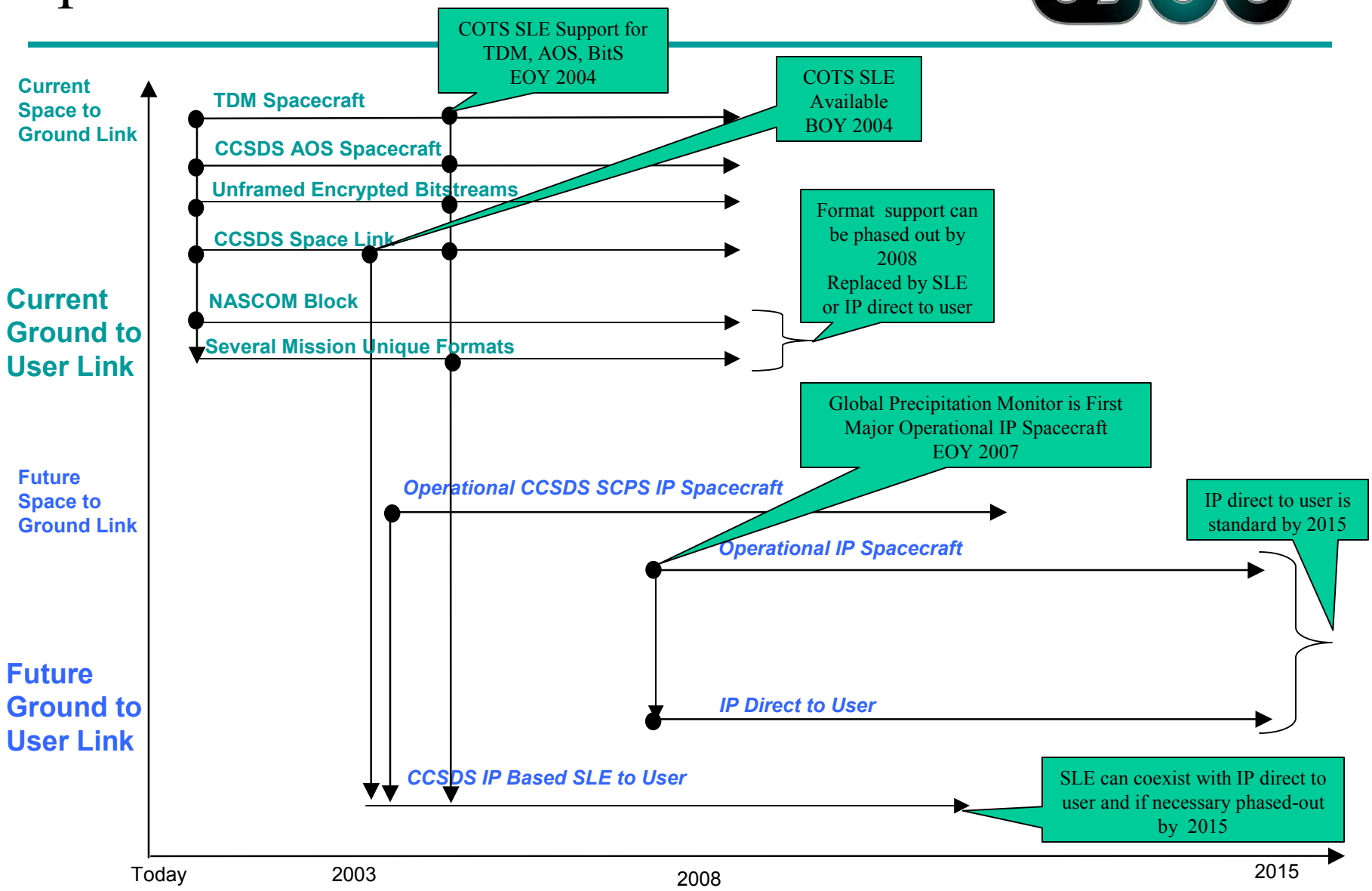


SLE Reference Model



B. Strategic Vision

Space To Ground To User Evolution

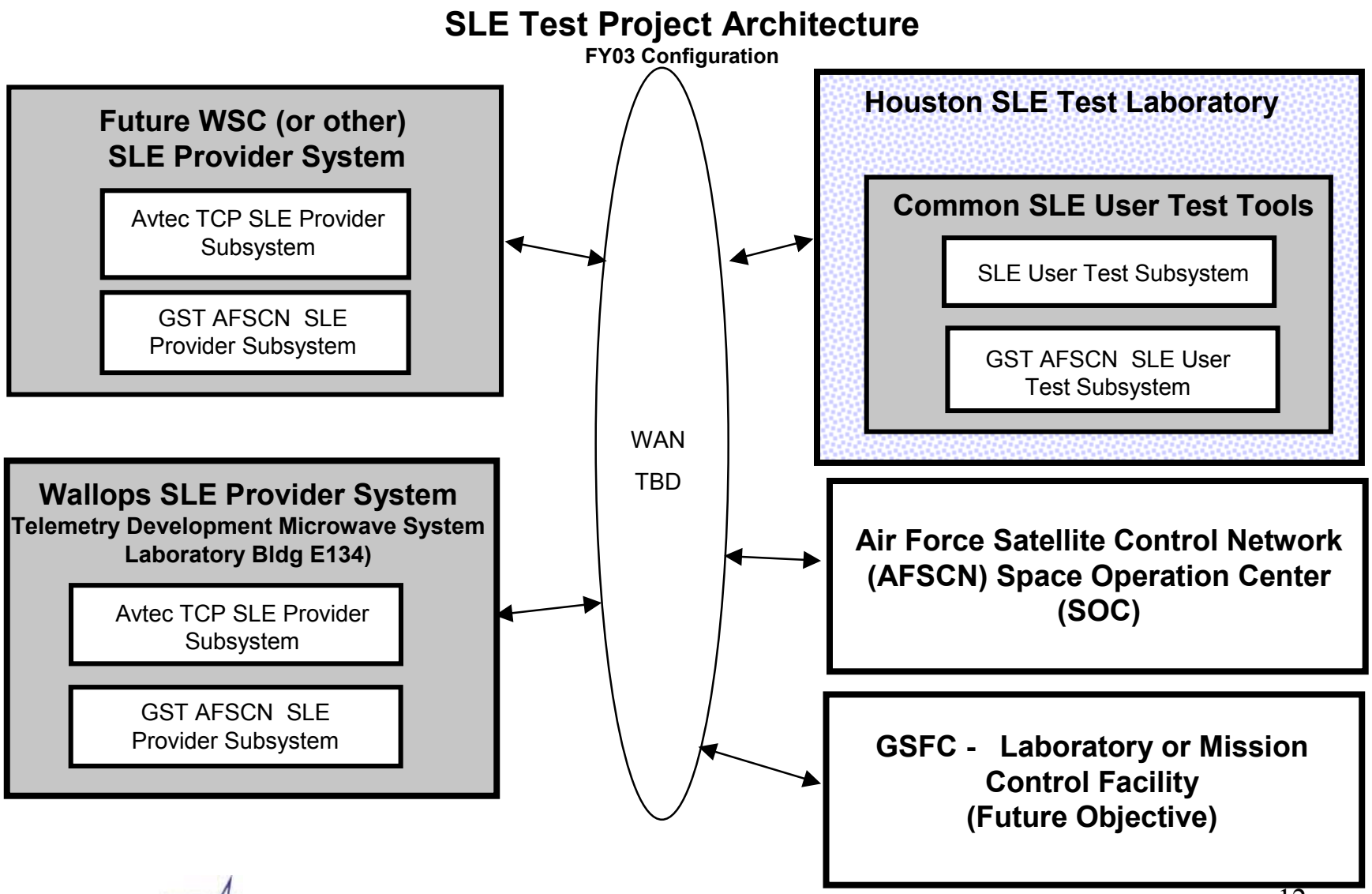


C. Current Activities

Current Activities (Part 1)

- **Part 1: Identify and implement SLE standard data services for future science missions**
  - Creating an SLE interoperability testbed as part of NASA-approved, SODA SM03 "SLE Test Lab and Wallops Demonstration System" to:
    - Demonstrate CCSDS Space Link Extension as proposed by the Nascom Block Phase Out working group
      - Use as platform for cross agency interoperability tests
        - » Establishes the infrastructure required for interoperability testing between Air Force Satellite Control Network (AFSCN) Space Operations Center (SOC) and NASA ground facilities
      - Implement a test system to demonstrate CCSDS SLE based on products developed by JPL and ESA for the INTEGRAL project
      - Use as demonstration system for missions considering SLE
      - Test COTS Avtec vendor SLE RAF, RCF, CLTU product maturity
  - **On schedule** to provide SLE test/demonstration capability in FY 2002
    - Deploys a SLE provider system at NASA's GN Wallops station
    - Deploys a SLE user site in CSOC Houston

Current Activities (Part 1 Continued)



Current/Future Activities

- **Part 2: Develop and test extensions to SLE service implementations to support legacy missions using TDM, CCSDS AOS, and encrypted bitstream space links**
  - Activities with JSC
    - Build a user site (Requires 1 PC class workstation and network connectivity)
      - Uses SLE provider testbed at Wallops and WSC and user site at JSC
    - Define extensions required for ISS and SSP and get COTS vendor support for extensions
  - Activities with MSFC
    - Define WAN connectivity for Testbed and for AFSCN sites
    - Plan to present SLE architecture to UMS/PDSS re-engineering
  - Activities with GSFC
    - Build a user site (Requires 1 PC class workstation and network connectivity)
      - Uses SLE provider testbed at Wallops and WSC and user site at GSFC
      - Will show that SLE is an option for ACE mission re-engineering
  - Working with all centers to refine business case and define plans for implementing NASCOM Block Phase out at 15 sites
    - WSC, JSC, MSFC, KSC, Wallops, AGS Alaska,SGS Savlbard Norway, GRGT Guam, Poker Flats,MGS McMurdo Antarctica,GSFC
- **Part 3: Develop and implement NASCOM Block Phase-Out for ground data messages (tracking, inter-center vectors, site scheduling, site status, payload data, etc.). Addresses traffic not handled by current SLE data service model**
  - Plan in development and coordination with CCSDS, GSFC, AFSCN and JPL